

**WHAT IS CLAIMED IS:**

- 1           1.    A method executed in a computer based travel-  
2    planning-system, comprises:  
3            receiving trip segments;  
4            determining constraints on sequences of flights between  
5    the endpoints of the trip segments, the constraints derived  
6    from properties of fares that can be used with the flights;  
7    and  
8            generating itineraries from flights using the  
9    constraints; and  
10          pricing the itineraries.
- 1           2.    The method of claim 1 wherein the constraints are on  
2    flights.
- 1           3.    The method of claim 1 wherein the constraints are on  
2    itineraries.
- 1           4.    The method of claim 1 wherein the fares are fares  
2    between endpoints of trip segments.
- 1           5.    The method of claim 1 wherein the fares are fares  
2    between points connected by single flights to endpoints of  
3    trip segments.
- 1           6.    The method of claim 1 wherein generating provides  
2    itineraries for a complete trip.
- 1           7.    The method of claim 1 wherein generating provides  
2    itineraries separately for each trip segment.

1           8.    The method of claim 1 wherein constraints are based  
2   on fare routings.

1           9.    The method of claim 1 wherein constraints are based  
2   on fare carrier.

1           10.   The method of claim 1 wherein constraints are based  
2   on fare global indicator.

1           11.   The method of claim 1 wherein constraints are based  
2   on fare maximum permitted mileage.

1           12.   The method of claim 1 wherein the constraints are  
2   restrictions on individual flights used in itineraries.

1           13.   The method of claim 1 wherein constraints are  
2   constraints on airline and origin and destination triples.

1           14.   The method of claim 1 wherein constraints are  
2   restrictions on flight origin and destination.

1           15.   The method of claim 1 further comprising:  
2   choosing constraints based on fare price.

1           16.   The method of claim 1 further comprising:  
2   generating itineraries from flights without considering  
3   constraints.

1           17.   The method of claim 16 wherein pricing prices the  
2   itineraries from flights by considering constraints and  
3   wherein pricing further comprises:

4       pricing the itineraries generated without considering the  
5 constraints; and  
6       returning the priced itineraries.

1       18. The method of claim 1 wherein pricing further  
2 comprises:

3       restricting pricing of itineraries based on the  
4 constraints used to produce the itineraries.

1       19. The method of claim 1 wherein restricting pricing of  
2 itineraries is based restrictions on the endpoints of fares  
3 considered during pricing.

1       20. The method of claim 1 further comprising:  
2       generating itineraries from flights without considering  
3 constraints;  
4       pricing the itineraries from flights without considering  
5 constraints and with considering the constraints; and  
6       returning the priced itineraries.

1       21. A computer program product residing on a computer  
2 readable medium for producing itineraries comprises  
3 instructions for causing a computer to:  
4       receive trip segments;  
5       determine constraints on sequences of flights between the  
6 endpoints of the trip segments, the constraints derived from  
7 properties of fares that can be used with the flights; and  
8       generate itineraries from flights using the constraints;  
9 and  
10      price the itineraries.

1           22. The computer program product of claim 21 wherein the  
2 constraints are on flights.

1           23. The computer program product of claim 21 wherein the  
2 constraints are on itineraries.

1           24. The computer program product of claim 21 wherein the  
2 fares are fares between endpoints of trip segments.

1           25. The computer program product of claim 21 wherein the  
2 fares are fares between points connected by single flights to  
3 endpoints of trip segments.

1           26. The computer program product of claim 21 wherein  
2 generating provides itineraries for a complete trip.

1           27. The computer program product of claim 21 wherein  
2 generating provides itineraries separately for each trip  
3 segment.

1           28. The computer program product of claim 21 wherein  
2 constraints are based on fare routings.

1           29. The computer program product of claim 21 wherein  
2 constraints are based on fare carrier.

1           30. The computer program product of claim 21 wherein  
2 constraints are based on fare global indicator.

1           31. The computer program product of claim 21 wherein  
2 constraints are based on fare maximum permitted mileage.

1           32. The computer program product of claim 21 wherein the  
2 constraints are restrictions on individual flights used in  
3 itineraries.

1           33. The computer program product of claim 21 wherein  
2 constraints are constraints on airline and origin and  
3 destination triples.

1           34. The computer program product of claim 21 wherein  
2 constraints are restrictions on flight origin and destination.

1           35. The computer program product of claim 21 further  
2 comprising instructions to:  
3 choose constraints based on fare price.

1           36. The computer program product of claim 21 further  
2 comprising instructions to:  
3 generate itineraries from flights without considering  
4 constraints.

1           37. The computer program product of claim 21 wherein  
2 instructions to price, prices the itineraries from flights by  
3 considering constraints and wherein instructions to price  
4 further comprises instructions to:  
5 price the itineraries generated without considering the  
6 constraints; and  
7 return the priced itineraries.

1           38. The computer program product of claim 21 wherein  
2 instructions to price further comprises instructions to:  
3 restrict pricing of itineraries based on the constraints  
4 used to produce the itineraries.

1           39. The computer program product of claim 21 wherein  
2 instructions to price restricts pricing restrictions on the  
3 endpoints of fares considered during pricing.

1           40. The computer program product of claim 21 further  
2 comprises instructions to:  
3           generate itineraries from flights without considering  
4 constraints;  
5           price the itineraries from flights without considering  
6 constraints and with considering the constraints; and  
7           return the priced itineraries.

1           41. Apparatus comprising:  
2           a processor;  
3           a memory for executing a computer program product; and  
4           a computer readable medium storing the computer program  
5 product for producing itineraries comprises instructions for  
6 causing the processor to:  
7           receive trip segments;  
8           determine constraints on sequences of flights between the  
9 endpoints of the trip segments, the constraints derived from  
10 properties of fares that can be used with the flights; and  
11           generate itineraries from flights using the constraints;  
12 and  
13           price the itineraries.

1           42. The apparatus of claim 41 wherein the constraints  
2 are on flights.

1           43. The apparatus of claim 41 wherein the constraints  
2 are on itineraries.

1           44. The apparatus of claim 41 wherein the fares are  
2 fares between endpoints of trip segments.

1           45. The apparatus of claim 41 wherein the fares are  
2 fares between points connected by single flights to endpoints  
3 of trip segments.

1           46. The apparatus of claim 41 wherein constraints are  
2 based on fare routings.

1           47. The apparatus of claim 41 wherein constraints are  
2 based on fare carrier.

1           48. The apparatus of claim 41 wherein constraints are  
2 based on fare global indicator.

1           49. The apparatus of claim 41 wherein constraints are  
2 based on fare maximum permitted mileage.

1           50. The apparatus of claim 41 wherein constraints are  
2 constraints on airline and origin and destination triples.

1           51. A computer program product residing on a computer  
2 readable medium for producing itineraries comprises  
3 instructions for causing a computer to:  
4           receive trip segments;  
5           determine geographic and airline constraints derived from  
6 fare rules to control the manner in which flights are combined  
7 prior to the evaluation of fare rules; and  
8           generate itineraries by using the constraints.

1           52. The computer program product of claim 51 wherein the  
2 constraints are on flights.

1           53. The computer program product of claim 51 wherein the  
2 constraints are on itineraries.

1           54. The computer program product of claim 51 wherein  
2 constraints are based on fare routings.

1           55. The computer program product of claim 51 wherein the  
2 constraints are restrictions on individual flights used in  
3 itineraries.

1           56. The computer program product of claim 51 wherein  
2 constraints are constraints on airline and origin and  
3 destination triples.

1           57. A method for producing itineraries comprises:  
2 receiving trip segments;  
3 determining geographic and airline constraints derived  
4 from fare rules to control the manner in which flights are  
5 combined prior to the evaluation of fare rules; and  
6 generating itineraries by using the constraints.

1           58. The method of claim 57 wherein the constraints are  
2 on flights.

1           59. The method of claim 57 wherein the constraints are  
2 on itineraries.

1           60. The method of claim 57 wherein constraints are based  
2 on fare routings.



1        61. The method of claim 57 wherein the constraints are  
2 restrictions on individual flights used in itineraries.

1        62. The method of claim 57 wherein constraints are  
2 constraints on airline and origin and destination triples.

1        63. A computer program product residing on a computer  
2 readable medium for producing itineraries comprises  
3 instructions for causing a computer to:  
4        receive trip segments;  
5        determine constraints on sequences of flights, between  
6 the endpoints of the trip segments the constraints derived  
7 from properties of fares that can be used with the flights;  
8 and  
9        generate itineraries constrained by multiple constraints  
10 that are derived from a diverse set of fares in order to  
11 increase the diversity of generated itineraries;  
12        return at least some of the generated itineraries to a  
13 user.

1        64. The computer program product of claim 63 wherein the  
2 fares are chosen to include multiple airlines.

1        65. The computer program product of claim 63 wherein the  
2 fares are chosen to include multiple origins.

1        66. The computer program product of claim 63 wherein the  
2 fares are chosen to include multiple destinations.

1        67. The computer program product of claim 63 wherein the  
2 fares are chosen to include multiple origin-destination pairs.

1       68. A method for producing itineraries comprises:  
2       receiving trip segments;  
3       determining constraints on sequences of flights, between  
4 the endpoints of the trip segments the constraints derived  
5 from properties of fares that can be used with the flights;  
6 and  
7       generating itineraries constrained by multiple  
8 constraints that are derived from a diverse set of fares in  
9 order to increase the diversity of generated itineraries;  
10       returning at least some of the generated itineraries to a  
11 user.

1       69. The method of claim 68 wherein the fares are chosen  
2 to include multiple airlines.

1       70. The method of claim 68 wherein the fares are chosen  
2 to include multiple origins.

1       71. The method of claim 68 wherein the fares are chosen  
2 to include multiple destinations.

1       72. The method of claim 68 wherein the fares are chosen  
2 to include multiple origin-destination pairs.

1       73. The method of claim 1 where fares are filtered based  
2 on properties of the fare rules.

1       74. The method of claim 73 where fares fail if aspects  
2 of the fare's rules are violated.

1       75. The method of claim 74 where the aspects are the  
2 fare's effective and discontinue dates.

1           76. The method of claim 74 where the aspects are the  
2   fare's rules that limit at least one of travel dates and  
3   travel times.